

female; Suifu, 1922, female; Washan, 2,000 ft., July 18, 1925, female; Ning-yuen Fu, July 31, 1928, female.

### Heteropoda venatoria (Linnaeus)

*Aranea venatoria* Linnaeus Syst. Nat., 12th ed., p. 1035. 1767.

*Records*.—China: Szechwan Province, Washan, 2,000 ft., July 18, 1925, female; Suifu, 1922, female; April, 1924, female; April, 1928, two females; March 15, 1929, female.

ICHTHYOLOGY.—*Description of a new flatfish, with notes on related species.*<sup>1</sup> ISAAC GINSBURG, Bureau of Fisheries. (Communicated by WALDO L. SCHMITT.)

An extensive study of the American species of flatfishes belonging to the genus *Paralichthys* and the closely related genera *Hippoglossina* and *Pseudorhombus*, was carried out by me recently. Since the publication of the final report is likely to be delayed for some time, some of the more interesting results of that study, as well as a description of a new species, are published here separately.

Certain errors in the systematics of the species under consideration have been repeated for years and have acquired the weight of tradition. Nevertheless, the morphological facts compel me to break away from tradition. In a recent valuable book on the systematics of the flatfishes by Norman,<sup>2</sup> which is bound to be used as a standard book of reference by students of flatfishes in the years to come, a number of these errors are included. The most important of such current errors are here corrected.

The three genera under consideration were incompletely separated heretofore, and as a consequence some of the species were referred to genera to which they do not belong. The only substantial character which has been used for distinguishing *Pseudorhombus* from *Paralichthys* and *Hippoglossina* was the presence or absence, or the relative development, of the anterior branch of the lateral line. This character was used by previous authors and its use is continued by Norman.

However, this character only incompletely separates the groups of species. In the smaller Indo-Pacific species, which belong to *Pseudorhombus*, this accessory branch is *generally* better developed, reaching the dorsal profile, while in the American species it is usually not as

<sup>1</sup> Published by permission of the U. S. Commissioner of Fisheries. Received December 30, 1935.

<sup>2</sup> NORMAN, J. R. *A systematic monograph of the flatfishes (Heterosomata)*. Vol. 1. *Psettodidae, Bothidae, Pleuronectidae*. British Museum, London, 1934.

well developed; but this is not always true. In some species of *Pseudorhombus* the accessory branch is not better developed than in most American species; and in *californicus*, the genotype of *Paralichthys*, it is often well developed, reaching or nearly reaching the dorsal profile. Although these facts are shown in part by the outline figures published by Norman, he continues the use of this character in his key which is thus not entirely in accord with his own figures. As a matter of fact, the use of this character as the basis for the major division of the three genera leads to false conclusions. During my studies it was determined that the presence or absence of accessory scales constitutes a valuable character for the major division of the species into natural groups. Although this character was neglected heretofore, its use leads to a more natural classification of the species.

KEY TO THE GENERA

- a. Accessory scales absent.
  - b. Eyeball and orbit very large to moderately large, interorbital reduced to a mere ridge and origin of dorsal more or less behind anterior margin of eye; the three characters always occurring together. Anterior accessory branch of lateral line often rather poorly developed. . . . . *Hippoglossina* Steindachner
  - bb. Eyeball and orbit usually small or moderate, sometimes moderately large; interorbital usually wider than a mere ridge, sometimes reduced to a narrow ridge; origin of dorsal usually in front of anterior margin of eye, sometimes behind its anterior margin; sometimes approaching *Hippoglossina* in one or another of these characters, but the three usually not occurring together. Accessory branch of lateral line usually but not always reaching dorsal profile. . . . . *Pseudorhombus* Bleeker
- aa. Accessory scales always present, except in small specimens, their appearance with respect to size differing with the species. . . . . *Paralichthys* Girard

By the use of the above synopsis *Paralichthys* may in practice be distinguished satisfactorily, except for the smaller specimens; but much remains to be desired with respect to the separation of *Hippoglossina* and *Pseudorhombus*. The characters given in the key are the best known at present for separating those two genera, and judging solely by these characters, the best course would seem to be to unite them. However, each one of the two groups of contained species has a distinctive physiognomy and it seems highly probable that further study will reveal more satisfactory characters for separating them. Current usage is therefore continued and the two genera

are recognized as distinct for the time being. No matter how limited the synopsis may be for use in practice, it evidently groups the species in accordance with their true natural relationship.

*Hippoglossina mystacium*, n. sp.

Fig. 1

*Description*.—On eyed side scales ctenoid on body; mostly cycloid on head, but many weakly ctenoid scales present. On blind side, ctenoid scales present on posterior part of body, the ctenoid scales extending on midline to a distance behind arch about equal to  $1/2$  of its chord; scales on head and on body anteriorly cycloid. Scales in 52 rows over straight part of lateral line to end of hypural; 28 perforate scales in arch; 26 rows in a chord subtending the arch. Three cycloid, embedded scales on maxillary. Accessory scales absent. Gill rakers, 3 comparatively long ones on upper limb, with

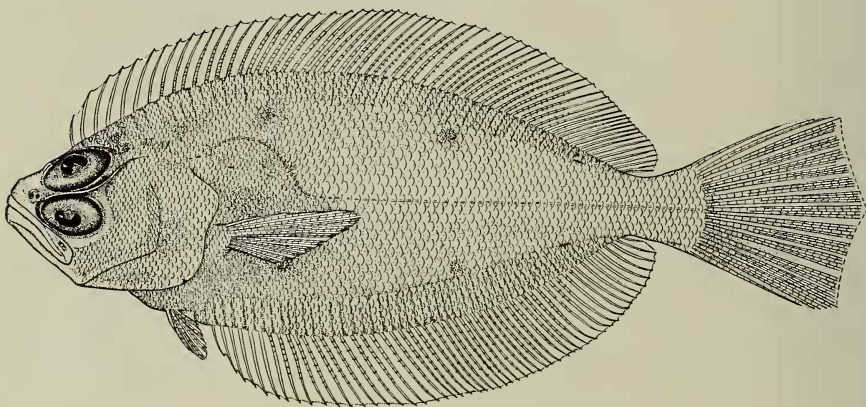


Fig. 1.—*Hippoglossina mystacium*, n. sp. Length of specimen 18.3 cm.  
Drawn from the type by Louella E. Cable.

2 widely spaced and very small ones above; 12 on lower limb (same on both sides). Anal rays 55; dorsal rays 66; pectoral rays 11 on eyed side, 10 on blind side. Origin of dorsal nearly over middle of eye. Eye notably large; interorbital a mere ridge. Anterior teeth but slightly enlarged. Maxillary extending to a vertical through posterior margin of pupil, conspicuously narrow posteriorly. Sinistral.

Color nearly faded, traces of 6 spots in 2 lengthwise rows present, like in the other species of the genus, somewhat nearer to upper and lower profiles than to straight part of lateral line, every spot in either row placed on a transverse line with its fellow in the other row; first pair of spots on a transverse line through about middle of arch in lateral line, second pair on a vertical somewhat nearer to head than to base of caudal, third pair not far from ends of dorsal and anal fins; traces of smaller spots on caudal peduncle, one each near upper and lower posterior angles, at base of caudal rays, these two spots being continued to a slight extent on blind side.

*Measurements of type*.—Total length 183 mm. Standard length 146.5 mm. Greatest depth 39.8, least depth of caudal peduncle 9.5, head 30.7, length of maxillary 13.6, greatest width of maxillary 3, orbit 10.4, eyeball 8.5, snout (to margin of upper orbit) 6.5, left pectoral 17.9, right pectoral 13.1,

left ventral 9.1, right ventral 8.8, caudal 24.9, and straight part of lateral line 57.1% of standard length. Length of chord subtending arch in lateral line 3.6 times in straight part; length of a vertical from chord to apex of arch 3.2 times in arch.

*Holotype*.—U.S.N.M. 77393, near Taitao Peninsula, Chile; Albatross Station 2787; lat.  $46^{\circ}47'30''$  S., long.  $75^{\circ}15'$  W.; 61 fath.; Feb. 9, 1888.

*Comparison*.—The nearest relatives of this species are *Hippoglossina stomata* Eigenmann and Eigenmann, *H. bollmani* Gilbert and *H. macrops* Steindachner. The specimen described was directly compared with specimens of the former two species, including their types; but for its comparison with *macrops*, I had to rely on the original account. It is most closely related to *stomata*, differing in having a shorter and narrower maxillary, and a shorter head. It further differs in that the maxillary is almost bare of scales, while that of *stomata* has a small patch of ctenoid scales. The present species is more remotely related to *bollmani*. It differs strikingly from *bollmani* in having more numerous gill rakers, and the anal rays are also more numerous. The number of scales and dorsal rays falls near the upper end, but outside the frequency distribution of that of *bollmani*. The ctenoid scales on the blind side extend more forward in *bollmani*. The body is deeper than in *bollmani*; but the two species approach closely in the length and width of the maxillary and the length of the head. As compared with the description of *macrops*, the present species has a shorter head, a more slender body and the ctenoid scales on the blind side extend more forward.

#### *Hippoglossina oblonga* (Mitchill)

This species from the east coast, which is common enough to enter the commercial catch, although its market possibilities are limited by its comparatively small size, has been placed universally, except by the early authors, in *Paralichthys*. However, unlike all species of *Paralichthys* it lacks accessory scales. In this it agrees with the species of *Hippoglossina*. Also, it always has some ctenoid scales on the blind side, a character normally present in most species of *Hippoglossina* but not in those of *Paralichthys*, except to some slight extent in infrequent individual variants. Furthermore, this species has a very narrow interorbital, a comparatively large eye and relatively small teeth, nearly agreeing with the species of *Hippoglossina* in these respects and unlike all species of *Paralichthys*. It is evident that this species is congeneric with the other species of *Hippoglossina*.

*H. oblonga* is evidently most nearly related to *Lioglossina tetrophthalmus* Gilbert from the west coast. After placing it where it properly belongs in the system, the boundary hitherto drawn between the genera *Lioglossina* and *Hippoglossina* largely breaks down, although they may be recognized as subgenera.

#### *Pseudorhombus isosceles* (Jordan)

This species likewise lacks accessory scales and has ctenoid scales on the blind side, and consequently must be removed from *Paralichthys*. It fairly agrees with the other species of *Pseudorhombus* and is the only known American representative of that genus. This species, the genotype of *Tarphops*, and four other Indo-Pacific species have ctenoid scales on the blind side. Judging by the morphology of the species of these three closely related genera, this character forms a more adequate and natural basis for separation than the number of scales. It would seem, therefore, desirable on grounds of morphology to rearrange the species of *Tarphops* and *Pseudo-*

*rhombus* and place them in two subgenera based on the presence or absence of ctenoid scales on the blind side. In that case, *isosceles* will fall in the subgenus *Tarphops*.

*Paralichthys triocellatus* Miranda Ribeiro, judging by the original account, is probably a synonym of *isosceles*. Four specimens of a flounder obtained at Cape Frio, Brazil, by the *Terra Nova* and recorded by Regan as *Paralichthys oblongus* are described and figured by Norman (op. cit., p. 80), and referred to *triocellatus*. Norman describes these specimens as having cycloid scales on the blind side. If *triocellatus* is in fact a synonym of *isosceles*, the four specimens forming the basis of Norman's account must represent an unnamed species. Even if *triocellatus* is distinct from *isosceles*, Norman's specimens evidently have fewer scales than Miranda Ribeiro's fish and they probably represent a new species anyway.

#### ***Paralichthys patagonicus* Jordan and Goss**

This species is placed by Norman in the synonymy of *vorax* (his *brasiliensis*). However, it has ctenoid scales on the eyed side and is entirely distinct from that species. *P. bicyclophorus* Miranda Ribeiro which Norman recognizes, is possibly a synonym of *patagonicus*. At least, the original account of *bicyclophorus* fails to show how it differs from this species.

#### ***Paralichthys brasiliensis* (Ranzani)**

Something may be said about the nomenclature of this and another species. Norman resurrects a name out of the synonymy and designates this species as *P. orbignyana* (Valenciennes), and uses the name of *brasiliensis* for an entirely different species, although he apparently did not examine the types on which either one of those two names were based. This shifting about of the names of species, one of them well established, seems unfortunate. This is a common species on the coast of Brazil which has been described and recorded a number of times by American authors to whom it was known for more than half a century under the name of *brasiliensis*. There are those biologists who claim that a well established name should be retained regardless of priority and there are some cogent arguments which may be advanced in favor of that contention. Without discussing the pros and cons of this proposition, I think that it will be generally admitted that, at least, a well established name is not to be changed unless good and sufficient reasons are advanced for the change. In the present case the only way of definitely determining the question is by a reexamination of the types of both, *brasiliensis* and *orbignyana*, since the original accounts are not sufficient to identify the particular species. Pending such study I continue the use of the well established name *brasiliensis* for this species. Judging by the material in the U. S. National Museum and that recorded by Norman in the British Museum, the present species is much more common than the following. Considering probabilities alone, therefore, the chances are much greater that Ranzani had specimens of the present species.

#### ***Paralichthys vorax* (Günther)**

American writers have generally placed the name *vorax* in the synonymy of their *brasiliensis*; while Norman who designates the *brasiliensis* of American authors as *orbignyana*, describes this species under the name of *brasiliensis*. We thus have a nice, and possibly unnecessary confusion of names. Norman, who studied the types of *vorax*, correctly distinguishes this species from the *brasiliensis* of American authors.

It is remarkable that in the structural characters which I studied in detail, such as the number of gill rakers, fin rays, scales and proportional measurements, this species agrees or very nearly agrees with *albigutta* from the east coast of the United States, although the geographic ranges of the two species are widely discontinuous. The only substantial difference is found in the color, *vorax* lacking the ocellated spots characteristic of *albigutta*.

There is only one specimen of this species in the U. S. National Museum. Norman records only two specimens, the types, in the British Museum. That author also lists with a query one large, stuffed specimen from Fort Famine, Magellan Strait. This is apparently the same specimen which Günther described as *Pseudorhombus dentatus*, stating that the scales are "minutely ciliated." The presence or absence of ctenoid scales in large specimens is always a good specific character in *Paralichthys*. This specimen, therefore, represents either *patagonicus* or an unnamed species.

#### *Paralichthys lethostigma* Jordan and Gilbert

Norman evidently did not well separate his material of *Paralichthys* from the east coast of the United States. The specimen from Beaufort, North Carolina, which he records under this species is an unusually slender example of *albigutta*. The specimen which Norman lists from Tobago can hardly be a *lethostigma* considering the comparatively limited geographical distribution of the species of *Paralichthys*. It may likely prove to be an example of *P. tropicus* Ginsburg which is very near in its structural characters to *lethostigma*. The counts of the dorsal and anal rays given by Norman for *lethostigma* range too low. This is evidently due to his inclusion of some *albigutta* material in his account. The frequency distributions of these counts are very nearly the same in *dentatus* and *lethostigma*.

The species of *Paralichthys* are not easy to distinguish. Nevertheless, if frequency distribution tables of the more important specific characters are prepared, and the several characters of any given specimen are compared with such tables, it becomes a relatively easy matter to refer with assurance individual fish to their proper species. Such tables of the scale, gill raker, and fin ray counts, and comparative tables of proportional measurements are included in my manuscript.